

*Original article:*

**Intention of Nutrition Students in Implementing General Guidelines for Balanced Nutrition**

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**Abstract**

General Guidelines for Balanced Nutrition is a daily food composition based on the type and amount of nutrients, all of which have been adapted to the body's daily needs. Nutrition students have practical experience in educating balanced nutrition, which they have learned during their learning. Even so, they still experience nutritional problems and still need to comply: General Guidelines for Balanced Nutrition in their daily lives. The purpose of this study was to determine the intention of nutrition students in implementing general guidelines for balanced nutrition. This study uses a combination of quantitative and qualitative methods. The population of this study is nutrition students, Instagram application users, and the subject nutrition Instagram account followers who have the content of the General Guidelines for Balanced Nutrition. Study 1 was quantitative from a survey of 114 respondents who got the results of good intentions in the 82% and behaviour 83%. The results of the Pearson statistical test between the relationship between intention and behavior in the application of general guidelines for balanced nutrition with a p-value of 0.000, this result can be concluded that the value is smaller than 0.05 with a correlation coefficient value or r table 0.424. Study 2 conducted in-depth interviews with 6 respondents selected by purposive sampling from 114 respondents with the results of the interviews showed that these six have a strong intention to implement and educate the General Guidelines for Balanced Nutrition. The author's observations visited respondents to see diving activities a day, and the respondents found that they carried out two messages from the ten messages of balanced nutrition contained in the General Guidelines for Balanced Nutrition. Nutrition students need real action in implementing the General Guidelines for Balanced Nutrition in their daily lives. However, nutrition students have a good intention category in writing and verbally but not with what they practice daily.

**Keywords:** Education, Balanced Nutrition, Nutrition Students, Instagram

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**Introduction**

The Nutrition Guidelines with Balanced Diet have been practiced in many countries since 1992 as a follow-up to the recommendations of the World Food Conference (FAO)/WHO in Rome. And the old guidelines that follow the Basic Four

guidelines from the USA, such as 4 Healthy 5 Perfect, have been updated into the Balanced Diet Pyramid. Whereas in Indonesia, it is better known as the General Guidelines for Balanced Nutrition. It is a daily food composition based on the type and amount of nutrients, all of which have been

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adapted to the body's daily needs<sup>1,2</sup>.

Students have several important roles, one of which is as a driver who invites the community to make changes for the better by considering various sciences and ideas according to the focus of their studies. This is usually done through training and counseling activities<sup>3</sup>. Nutrition students are individuals who are studying nutrition at the university level, both public and private, or other institutions that are at the same level as universities. Nutrition science is one of the focuses of study in the health sector, which aims to increase awareness, willingness, and ability to live healthily for everyone to realize the highest degree of public health. As prospective nutritionists, nutrition students are required to master various competencies. Nutrition students have practical experience in educating balanced nutrition, which they have learned during their learning. The difference between vocational and undergraduate can be seen clearly through the composition of the curriculum. Vocational education generally has an academic curriculum comprising 60% practice and 40% theory. At the same time, undergraduate education consists of 60% theory and 40% practice<sup>5</sup>.

According to Ajzen (2005), the intention is a person's position on the subjective probability dimension that involves a relationship between himself and several actions. Then intention is a motivational factor that affects behavior and describes a person's willingness to try a behavior until there is the right opportunity to do it. Balanced nutrition behavior is a state of a person's self in doing something such as acting, behaving, thinking, and providing feedback or response to something in maintaining and improving the composition of daily food intake based on the type and amount of nutrients adapted to the daily needs of the body. Early nutritional needs are met by considering the principles of food diversity, physical activity, clean living behavior, and maintaining normal body weight. These responses can be in the form of active and passive responses<sup>6,7</sup>.

Nutrition students must understand and apply the General Guidelines for Balanced Nutrition, and this is because they will become nutritionists in the future whose task is to provide advice and information to patients related to the implementation of nutrition and nutrition related to diagnosis or health problems. Before nutrition

students educate the public regarding the General Guidelines for Balanced Nutrition, they must first understand knowledge and act. Students with a deeper analytical mindset than their peers need to have the opportunity to hold the title of student<sup>8</sup>. Therefore, even if they do not take a study program related to nutrition, students will tend to gain nutrition knowledge through seminars, books, magazines, or internet media. This allows students to have good nutritional knowledge. In addition, life pattern also affects students' consumption patterns. For example, a student who follows a strict diet maintains a thin body. They will skip one or more meals each day, not eat fatty foods, and limit the types of food they eat<sup>9</sup>.

To prevent nutrition students from experiencing nutritional problems, it is necessary to apply the principles of balanced nutrition, which can be used as guidelines for nutrition, physical activity, healthy lifestyles, and normal weight control. This is in line with research showing the tendency of nutritional problems that occur by students, such as research in Malaysia, which is 6.1% of the sample of undergraduate students are underweight, 53.4% in the normal range of 23.0% are overweight, and 17.6% are obese (Radzi et al., 2019). While in Indonesia alone, nutritional problems can still be found in university areas, especially students with nutritional status results during the pandemic underweight 17.0%, normal 48.2%, overweight 17.9%, obesity level I 13.4%, obesity level II 3.6%<sup>10</sup>. Furthermore, Masitah's research (2018) shows that social media can increase nutritional knowledge because health education using Instagram application media can contain visual formats such as pictures or videos online<sup>11,12</sup>.

The selection of Instagram social media does not escape its popularity as a medium of education and information among nutritionists and nutrition students as one of the breakthroughs in technological progress. Instagram provides an excellent opportunity for educating the General Guidelines for Balanced Nutrition for nutritionists and nutrition students<sup>13,14</sup>. Instagram provides a new way for nutrition students to learn to apply the General Guidelines for Balanced Nutrition critically before they also educate when they become nutritionists while helping nutrition students reflect on meaningful learning processes<sup>15</sup>. This study aims to determine the intention of nutritional vocational students in implementing general guidelines for balanced nutrition. In the

end, to find out what positive impact was obtained by nutrition students in improving the behavior of implementing the General Guidelines for Balanced Nutrition in daily life.

### Material and Method

This research is mixed method research with a sequential model combination method. In the first stage, the research uses a quantitative method with a lower weight than the qualitative method carried out in February-April on three Gizi Instagram accounts. The first study quantitatively by conducting a questionnaire survey that will be measured here is the variable of intention and behavior. Meanwhile, for the second study, after the survey selected informants from the respondents in the first study, six informants were taken with two methods of in-depth interviews and observation to determine intentions and behavior<sup>16</sup> e research subjects were nutrition students, active Instagram users, and followers of nutrition Instagram accounts. The subjects in this study were 114 respondents in the first study, and 6 informants were selected using the purposive sampling method from the 114 respondents in the initial study in the second study. Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 28 of 2019, the age of students is in the 19-29 year range. The independent research variable is balanced nutrition intention, while the dependent variable is the healthy behavior of nutrition students who follow nutrition Instagram accounts. The questions in the knowledge questionnaire of students majoring in nutrition will be assessed using a multiple-choice scale consisting of 15 questions. The total score is categorized into 1: less if the correct answer is <60%, 2: enough if the answer is 60-80% correct, and 3: good if the correct answer is >80%.

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The first study data in this study consisted of variables of intention and behavior. Intention and behavior data were collected by filling out questionnaires distributed by three Instagram nutrition accounts with followers of more than ten thousand followers. This is done because data collection during the Covid-19 pandemic is not allowed to meet in person according to Indonesian government regulations. The second study was conducted by collecting data online through the zoom meeting application by asking open questions about the intentions and behavior of balanced nutrition. Then indirect observations were made with informants providing activities related to the General Guidelines for Balanced Nutrition<sup>17</sup>. The study used an online survey using a website from Google Forms. Research question questionnaires were taken from journals that have been published and have been modified by researchers. The authors assisted and compiled the in-depth interview and observation guidelines using open-ended questions and Indonesian spelling to make it easy to understand when conducting interviews and giving instructions. Data analysis using SPSS 16.0 computer application in knowing the relationship between the two variables of intention and behavior with correlation test and using Nvivo computer application to help code interview and observation data.

### Result

#### First Study

With the survey results in detail, the data can

be seen in the following tables by analyzing the characteristics and the description of anthropometric measurements. Description of the basic characteristics of Instagram users, description of knowledge, attitudes, and behavior of research respondents about balanced nutrition. It is hoped that it can describe the basic characteristics of research respondents.

**Table 1.** Distribution of Basic Characteristics of Research Respondents Variable

Variable	Amount	
	Frequency (n)	Percentage (%)
<b>Gender</b>		
Man	4	3.5
Woman	110	96.5
<b>Age</b>		
18	9	7.9
19	27	23.7
20	37	32.5
21	41	36.0
<b>Lecture Semester</b>		
1	1	0.9
2	15	13.2
3	5	4.4
4	23	20.2
5	8	7.0
6	35	30.7
7	4	3.5
8	22	19.3
10	1	0.9
<b>Study Program</b>		
Diploma III	13	11.4
Diploma IV	31	27.2
Bachelor	70	61.4

Based on the distribution of the characteristics of the research respondents is shown in Table 1. Based on gender, the highest number is in the female group, namely 96.5%, the age category of 14 years is 50.0%, the semester of college is in the 6th semester with 30.7%, and the study program consists of undergraduate nutritionists 61.4%.

**Table 2.** Distribution of Basic Characteristics of Instagram Users

Variable	Amount	
	Frequency (n)	Percentage (%)
<b>Instagram account</b>		
@IG1	10	8.8
@IG2	14	12.3
@IG3	7	6.1
Following All Three	83	72.8
<b>Knowing Instagram Account</b>		
Family	1	0.9
Friend	14	12.3
Own	67	58.8
Instagram Recommendations	32	28.1
<b>Long Following Instagram Account</b>		
> 5 months	26	22.8
> 8 months	26	22.8
> 1 year	62	54.4

Based on the distribution of the number of Instagram followers on nutrition and duration of use of Instagram is shown in Table 2. As many as 72.8% of nutrition students follow the three Instagram accounts about nutrition, 58.8% know Instagram accounts from searching for themselves with their interest in nutrition, and 54.4% of nutrition students have followed Instagram account for more than 1 year.

**Table 3.** Distribution of Intentions and Behaviors Implementation of the General Guidelines for Balanced Nutrition

Variable	Amount	
	Frequency (n)	Percentage (%)
<b>Intention</b>		
Not enough	1	0.8
Enough	31	27.1
Well	82	71.9
<b>Behavior</b>		
Not enough	1	0.9
Enough	30	26.3
Well	83	72.8

Based on table 3. Results of Intentions and Behavior of research respondents regarding

General Guidelines for Balanced Nutrition. Respondents have intentions with good category 71.9% and less category 0.8% while for behavior to get behavior results with good category 72.8% and less category 0.9%.

Based on table 4. Above, it can be concluded that the results of the Pearson statistical test between the relationship between intention and behavior in the application of general guidelines for balanced nutrition with a p-value of 0.000, this result can be concluded that the value is smaller than 0.05 with a correlation coefficient value or  $r$  table 0.424. Thus  $H_0$  is rejected, and  $H_1$  is accepted, which means that there is a significant relationship between intention and behavior in applying general guidelines for balanced nutrition.

### Second Study

After the first study, the author continued the second study with data that there was a relationship between good intentions and good behavior in applying general guidelines for balanced nutrition. Therefore, in the second study, 6 informants were taken from 114 respondents who participated in purposive sampling with the help of a wheel of names computer application to choose the informant's name after being selected. The informants would be coded I1 to I6. The interview results in the intention or intention session produced an overview of the informants' desire to apply balanced nutrition; their desire arose to educate and motivate the community to implement balanced nutrition. Intentions or intentions produce a picture of the informant's desire to carry out or apply balanced nutrition. The informants' intentions to carry out balanced nutrition are very strong even though they are difficult to do in practice.

*I1 A lack of awareness causes it: "Humans tend to underestimate the future, meaning that the things we have now are more valuable to us than the things we will have in a few years".*

*For example, most informants are very strong in implementing balanced nutrition: I1 that he intends to carry out general guidelines for balanced nutrition in daily life. "...yes, actually*

**Table 4.** Test the Relationship between Intentions and Behavior of the Implementation of the General Guidelines for Balanced Nutrition

Variable	Amount			
	Frequency (n)	$r_{xy}$ Table	$r_{xy}$ Calculate	P<Value
Intention with Implementation Behavior	112	0.424	0.184	0.000
General Guidelines for Balanced Nutrition				

*my intention is because to maintain our own body condition and also keep away from disease...".*

*I3 intends to carry out general guidelines for balanced nutrition because they want to be healthy and not easily fatigued in physical activities. "... yes, I intend... yes, I want to be healthy, firstly, I don't get sick easily, I don't get tired easily because we often feel like that, then secondly, we provide education to the public so that people believe that by giving good feedback..."*

In the in-depth interview, the author's behavioral session focuses more on discussions based on the informants' experiences applying balanced nutrition. Behavior is a set of actions or actions of a person responding to something. Therefore, questions in the behavioral session will focus on the informants' experiences regarding balanced nutrition.

*Implementing balanced nutrition, I3 admit that more is needed when doing balanced nutrition. "... it's not good enough, it's not good enough, right, even though I've reduced the consumption of snacks that have a lot of fried food, but in one meal, it's not complete, you know, I've arranged it but sometimes it's not complete because of the availability of food at home, right? there is no such thing, no vegetables or complete animal and vegetable side dishes, sometimes there is no fruit but as much as possible if it is complete I also apply ..".*

*I4 also tells about the obstacles in implementing balanced nutrition. "... the obstacles that I experienced... that's what was mentioned a lot earlier. Like the availability of side dishes or diversity in the kitchen at home, it becomes an*

*obstacle. ...”.*

*15 explains the factors of implementing balanced nutrition. “...there is a problem, usually it’s actually time, only if the obstacle is usually a regular breakfast, if we want to study offline, it’s rarely breakfast because there are people who drive from home to campus it’s far ...”.*

## Discussion

In this study, there were more women than men because most of the respondents in the health faculty were female<sup>18,19</sup>. Students here have an age of 18-21 years, with a maximum age of 21 years 36.0% and a minimum age of 18 years 7.9%. This is by the theory that students enter adulthood which is generally in the age range of 18-25 years or young adults. In research, the age group is only 18-21 years old. It is feared that those aged > 21 years are no longer active or are busy writing a thesis<sup>20</sup>. Respondents here are nutrition students with undergraduate study programs 61.4%, diploma IV 27.2% and diploma III 11.4% and with various semesters from at least semester 10.9% and at most semester 6 30.7%, it is expected that respondents with high education can understand the knowledge questionnaire, attitude, and behavior. Respondents with academic education influence a person’s nutritional knowledge. The higher their educational level of education, the higher their information ability can increase their knowledge<sup>21</sup>.

From the results obtained in the survey, it was found that most of the nutrition students following Instagram accounts such as @ IG1, @ IG2, and @ IG3 have sufficient knowledge about balanced nutrition. This is different from the education level of the respondents, especially nutrition students, so it is hoped that the level of understanding of balanced nutrition can be even better. This is because informants are more informed and know more about developing @ IG1, @ IG2, and @ IG3 accounts. The selection of educational information materials is currently very necessary. Social media users play an active role in the selection and use of media. Usually, media users choose media because of their individual psychological and social needs. Like respondents, they chose Instagram as an educational news media because of its ease of application<sup>22</sup>.

Based on the Theory of Planned Behavior, intentions can accurately predict various behavioral tendencies<sup>23</sup>. According to Schiffman

(2007), intention is a person’s tendency to perform a certain action or behavior<sup>24</sup>. In the research of Dhauvadel et al. (2022), it was found that the nutrition education program was found to be significantly effective in changing students’ intention to consume healthy food and attitudes, perceived behavioral control, and intentions toward healthy eating behavior. However, there was no significant change in social media on healthy eating behavior<sup>25</sup>. Therefore, school-based nutrition education programs will change healthy eating intentions. Likewise the research conducted by Handarbeny (2017), explaining the change in intention in the treatment group is the result of education in the form of discussion, by discussing the respondents feel motivated so that the intention to increase taking balanced nutrition actions<sup>26</sup>.

According to the general guidelines for balanced nutrition, in the science of nutrition, a variety of foods (i.e., foods that contain nutrients the body needs in both quality and quantity) are often called Triguna foods which contain energy, structure, and regulation food<sup>27</sup>. Ministry of Health according to research from Plotnikoff (2015), the analysis results showed that many students had followed the first pillar regarding eating a variety of foods, which is a message that has been quite well implemented<sup>28</sup>. This has the same results as research (Mozaffarian et al., 2018), which shows that half of all students have bad eating habits. Diverse foods are needed because in every food ingredient, and there is no single type that contains complete nutrients. Besides the amount and type of nutrients in each type of food ingredient are also different. So the more diverse the pattern of food dishes, the easier it is to meet the needs for various nutrients<sup>29</sup>.

Guidelines for balanced nutrition are a daily diet containing nutrients in the right type and amount according to the body’s needs, accompanied by 4 principles. Balanced nutrition guidelines are made to replace the slogan “4 Healthy 5 Perfect”, which is considered irrelevant to today’s society. However, General Guidelines for Balanced Nutrition is not quite familiar in the community because the scientific description is quite high compared to the slogan “4 Healthy 5 Perfect”<sup>30</sup>. This is in line with Fauzi’s (2012) research, which was conducted on 11 informants and found that none of the students knew the General Guidelines for Balanced Nutrition and was more familiar with the slogan “4 Healthy 5 Perfect”<sup>31,32</sup>. In addition, previous research found that respondents

chose food regardless of whether the food was nutritionally balanced or not, and the General Guidelines for Balanced Nutrition values were not known by most of the respondents. In line with that, the results of McManus's research (2017) on informants stated that information related to General Guidelines for Balanced Nutrition was still not widespread in the community. Hence, students' knowledge about General Guidelines for Balanced Nutrition still needed to be higher<sup>33</sup>.

The results of the research that nutrition students received from two exposures to social media Instagram nutrition and nutrition lectures had a strong intention in implementing balanced nutrition. However, in practice, students only explained a few general guidelines for balanced nutrition, with most grateful for and enjoying various foods<sup>34,35</sup>. Food and the least that is done is consuming various staple foods. Meanwhile, why do nutritionists use Instagram as a medium for education and promotion of balanced nutrition by departing from the reason that many untrue nutritional myths must be overcome, one of which is through the provision of education and information, there are still many people, families and nutrition students who do not understand correctly what is balanced nutrition and there are still many who know "4 Healthy 5 Perfect"<sup>36</sup>. With the development of technology, the use of social media Instagram as a medium of information is used by informants who are nutritionists as an educational medium because Instagram can be accessed anywhere and anytime, especially Instagram has the advantage of audio-visual that is easy and understandable for followers of the informants' Instagram account. Thus, the results cannot be generalized to the entire population<sup>37</sup>.

The limitation of this study is that the distribution of online questionnaires with 3 nutrition Instagram accounts is not 100% accurate and efficient.

However, at least it can describe the knowledge, attitudes, intentions, behavior, and subjective norms of nutrition students about balanced nutrition that they get from the Instagram account. Sampling can only be represented by some groups of students in Indonesia who have implemented balanced nutrition through balanced nutrition education using Instagram social media. This certainly has many shortcomings, including the data obtained being less accurate and precise.

### **Conclusion**

Nutrition students need real action in implementing the General Guidelines for Balanced Nutrition in their daily lives. However, nutrition students have a good intention category in writing and verbally but not with what they practice daily.

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This study had no financial support or sponsorship from any party pure research using finance from researchers.

### **Conflict of interest**

None of the authors have any conflict of interest. We also would like to declare that we do not have any competing interests.

### **Ethical clearance**

It has been approved by the Research Ethics Committee of the Faculty of Medicine, Sebelas Maret University, Surakarta, Indonesia

### **Authors' contribution**

Data gathering and idea owner: Deri Andika Putra, Suminah, Eti Poncorini Pamungkasari

Writing, editing final draft and submitting of the manuscript: Deri Andika Putra

Approval of final draft: Suminah, Eti Poncorini Pamungkasari

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